**Application Note**

**Viewing PESA XSTREAM RTSP Streams in a Web Browser**

**Using VLC and HTML**

**John R. Naylor**  
3/12/2015

---

**Introduction**

This App Note describes how to view an RTSP output stream from the PESA XSTREAM C22 encoder/decoder appliance on a PC. Depending on your application, viewing the stream content with a dedicated streaming decoder, such as the VLC Media Player freeware application from Videolan, running on the PC may be perfectly acceptable. In other instances it may be desirable to have the streaming content displayed on the PC as an element of a web page using a common web browser application. Both methods are discussed in this document.

**You Will Need**

- Access to a PESA XSTREAM C22 device.
- A video source without HDCP content protection on the output. In this example, we are using a first generation Apple TV device, which has an HDMI output. Other supported source types include SDI and HD-SDI via the XSTREAM’s BNC connector.
- A text editor, Wordpad is ok, Notepad++ is awesome.
- VLC Media Player, an open source, freeware media player application, which is downloadable from www.videolan.org.

---

**Figure 1 - System Diagram**

---
Step by Step

Step 1. Connect Video and Power to the PESA Xstream C22
Connect the output from the C22 external power supply module to the rear panel Power Input connector, and apply power to the C22 by connecting the power supply power cord to a source of primary power. For convenience, there is no separate power switch on the C22 and the unit will begin boot-up when power is applied.

Connect the video source to the C22, in this example the HDMI output of the Apple TV module connected to the C22’s HDMI input.

Before you connect the C22 to the network, allow the unit to complete boot-up and note the currently set IP address shown on the front panel display device.

Step 2. Establish Network Communications with the PESA Xstream C22
Ensure that the currently set IP address of the C22 is compatible with your network and will not cause a conflict with other devices. If the current IP address will allow the C22 to communicate on the network, connect the C22 to your Ethernet through either of the rear panel connectors. If necessary, you may easily change the IP address of the C22 once communication is established.

This step is much more about configuring your network than using the C22. First try opening a new web browser window setting the URL to the IP address displayed on the C22’s front panel. If that works for you, proceed to step 3. It didn’t for me, so what follows is an account of how I fixed my problem.

The Xstream C22 unit I received was preprogrammed to IP address 192.168.3.146 which was a minor problem because, although my PC was picking up its IP address using DHCP, the network mask was too restrictive at 255.255.255.0.

In order to communicate with the C22, I used Windows Control Panel to temporarily set a static IPv4 address for my laptop, and set its network mask to 255.255.252.0. I made sure that I used the same IP address that had been allocated by DHCP.

Once I verified that I could communicate with the C22 using the ping utility, I successfully loaded the C22’s web interface. I then set the C22 to use an IP address and network mask to 192.168.1.146 and 255.255.255.0 respectively, at which point I reset my PC’s Ethernet adaptor to use DHCP once more.
Figure 3 - Setting the C22's IP Address

If connection problems persist, please ask your network administrator for help.

Logon to the C22
If your C22 is factory fresh, you can log on as the admin (username: admin, password: a). Otherwise you will need help from the system administrator.

Setup Channel 1
The C22 has two fully independent channels that can either encode or decode. This application only requires one of them. In this illustration I’ve used Channel 1, but feel free to use Channel 2 if preferred.

Figure 4 shows how to access channel 1’s controls. We need to select the Local Input as the input source for the Encoder. You may also select the Local Input as the Local Output source, if desired. Clicking on the Mode Select box toggles the input source selection for both the Encoder and Local Output. Click the box until the highlighted line shows the desired input source selection.

Figure 4 also illustrates how the local input can be mapped to the HDMI input connector, among other options

Figure 4 - Selecting Channel 1 for Setup
Now select the <Encoder Setup> box in Figure 4 to reveal the following dialog.

![Encoder Setup Dialog](image)

**Figure 5 - Channel 1 Encoder Settings.**

Verify that the Encoder Input is set to local input (rather than a network input) as shown by the source display in the upper left corner of the page.

Also note the name of the channel, in this case “OCH.1”. We’ll use this information later.

Click the Settings button to open the Output Stream Settings dialog box as shown by Figure 6. If the C22 is currently configured in any other mode, ensure that the RTP/RTSP Configuration box is checked and that the Channel Mode is set to “Multiple Unicast”. Click Save to save the new settings.

![Output Stream Settings Dialog](image)

**Figure 6 - Setting the Local Input**
Feel free to adjust the other parameters as you wish. I’m going to gloss over them here because they don’t really affect the ability to view the content in a web browser.

Finally, and this step is optional, if you want to get a confidence monitor directly from the C22, connect an HDMI display to its HDMI output, and configure the C22’s HDMI output parameters as shown in Figure 7.

![Figure 7 - Setting up the HDMI Output](image)

The key is to set the Video Out parameter to the same channel chosen to be the Encoder, in my case I selected “Channel 1”.

**Viewing Your Stream using VLC**

After downloading and installing VLC, launch it and, from the Media menu, select the “Open Network Stream” option.

![Open Media](image)

Then enter the URL of your stream which comprises four parts:

1. The protocol specifier: “rtsp://” in this case. It tells VLC to use the Real Time Streaming Protocol to connect with what comes next...
2. The server address. You should recognize that this is the C22’s IP address that you set up or wrote down in step 1.
3. The port number, the standard one is 554.
4. The name of the stream, in this case “OCH.1”. If you’d prefer a different name for your stream, you can use the C22’s GUI to change it.

Select the <Play> button, and you should now see video in the VLC app that has been streamed from the C22.
If this doesn’t happen there are a few things to try

- Double check the network settings, especially make sure that you can ping the C22
- Double check all the parameter settings on the C22
- Double check the URL you gave to VLC
- If using an HDMI source, it’s possible that the video is protected using HDCP. The C22 does not accept HDCP protected content. Note that the GUI level screen of Apple TV’s is not HDCP protected which is why this set up works for me. I wouldn’t be able to use this configuration to watch movies or other protected content.

**Embed a Stream Reader in a web page**

I created the following HTML file that shows how to embed VLC’s active X RTSP reader in a web page, and direct it to the C22 as a source.

The only text you should have to change here is the stream name which occurs twice, and you’ll notice is identical to the stream name used to test that everything was working ok in the previous step.

```html
<!DOCTYPE html>
<html>
<body>
<h1>My Cool Player</h1>
<OBJECT classid="clsid:9BE31822-FDAD-461B-AD51-BE1D1C159921"
        codebase="http://downloads.videolan.org/pub/videolan/vlc/latest/win32/axvlc.cab"
        width="640" height="480" id="vlc"
        events="True">
    <param name="Src" value="rtsp://192.168.1.146/OCH.1"/>
    <param name="ShowDisplay" value="True"/>
    <param name="AutoLoop" value="False"/>
    <param name="AutoPlay" value="True"/>
    <param name="target" value="rtsp://192.168.1.146:554/OCH.1"/>
    <param name="version" value="VideoLAN.VLCPlugin.2"/>
    <param name="autoplay" value="yes"/>
    <param name="loop" value="no"/>
    <param name="width" value="640"/>
    <param name="height" value="480"/>
<embed id="vlcEmb" type="application/x-google-vlc-plugin"
        version="VideoLAN.VLCPlugin.2" autopl ay="yes" loop="no" width="640" height="480"
        target="rtsp://192.168.1.146:554/OCH.1">
</OBJECT>
</body>
</html>
```

Save this file with “.html” as the extension and then open it with your favorite browser.
Results
Here's a screen grab of VLC and Chrome running side by side on my laptop.

Figure 8 - VLC Side by side with Browser view

Note that I needed to provide permission for my browser to use the VLC plug-in before I could view the content there.

Additional Resources
Check out www.stackoverflow.com for related tips on reading RTSP streams using QuickTime or Real Media plug-ins. My thanks to Russell who provided the embed code shown above.

Also check out www.pesa.com for up to date information about our streaming products and solutions, and feel free to contact us directly.

John R. Naylor  
VP Global Sales & Distribution, Streaming Products  
jnaylor@pesa.com

Joe Hallman  
XSTREAM Marketing Manager  
jhallman@pesa.com